Paper No. 29

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BRUCE A. TASSONE
and WAYNE A. TASSONE

Appeal No. 2003-0618
Application No. 09/351,218

ON BRIEF

Before STAAB, MCQUADE, and BAHR, Administrative Patent Judges.

MCQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Bruce A. Tassone et al. appeal from the final rejection (Paper No. 22) of claims 15, 16 and 25 through 31, all of the claims pending in the application.

THE INVENTION

The invention relates to "a system for providing both power augmentation and evaporative cooling in gas turbines" (specification, page 1). Representative claims 25 and 28 read as follows:

25. In a gas turbine having a multistage compressor compressing a flow of air, the compressor having an inlet, the flow of air being directed to the compressor inlet by a duct, a method of increasing power output from the gas turbine by both

evaporative cooling of the air prior to compression and intercooling of the air during compression, comprising the steps of:

a) introducing a first stream of water droplets into the flow of air at a first location in the duct, the first location being sufficiently far upstream of the compressor inlet such that at least a portion of the water droplets in the first stream of water droplets evaporate before reaching the compressor inlet, whereby the air flowing through the duct is cooled and humidified prior to reaching the compressor inlet by evaporation of the first stream of water droplets; and

b) introducing a second stream of water droplets into the flow of cooled and humidified air prior to compression thereof at a second location downstream from the first location, the second location being sufficiently proximate to the compressor inlet so that at least a major portion of the water droplets in the second stream of water droplets do not evaporate before reaching the compressor inlet, whereby the air being compressed in the compressor is intercooled by evaporation of droplets from the second stream of water droplets during compression thereof.

28. An apparatus for increasing power output in a gas turbine, having a duct directing air to an inlet of a multistage compressor, by both evaporative cooling of the air prior to compressor and intercooling of the air during compression, comprising the steps of:

a) means for introducing a first stream of water droplets into the flow of air at a first location in the duct, the first location being sufficiently far upstream of the compressor inlet such that at least a portion of the water droplets in the first stream of water droplets evaporate before reaching the compressor inlet, whereby the air flowing through the duct is cooled and humidified prior to reaching the compressor inlet by evaporation of the first stream of water droplets; and

b) means for introducing a second stream of water droplets into the flow of cooled and humidified air prior to compression thereof at a second location downstream from the first location, the second location being sufficiently proximate to the compressor inlet so that at least a major portion of the water droplets in the second stream of water droplets do not evaporate before reaching the compressor inlet, whereby the air being compressed in the compressor is intercooled by evaporation of droplets from the second stream of water droplets during compression thereof.

THE REJECTIONS

Claims 15, 25 through 28, 30 and 31 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,622,044 to Bronicki et al. (Bronicki).

Claims 16 and 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bronicki.

Attention is directed to the main and reply briefs (Paper Nos. 24 and 26) and the answer (Paper No. 25) for the respective positions of the appellants and the examiner regarding the merits of these rejections.

DISCUSSION

I. The 35 U.S.C. § 102(b) rejection of claims 15, 25 through 28, 30 and 31 as being anticipated by Bronicki

Bronicki discloses "a method of and apparatus for augmenting power produced from gas turbines" (column 1, lines 13 and 14). To support the appealed rejections, the examiner relies on the embodiment illustrated in Figure 8 which depicts an apparatus 221 for use with a power plant 220 composed of a main compressor, a combustor and a gas turbine. As described by Bronicki:

> Apparatus 221, according to the invention, includes direct contact heat exchanger 222 for contacting and cooling close to substantially saturated air with cooler water for producing cooler air and warmed water. The water may come [from] local sources such as a lake, river, or even the sea. Sensible and latent heat is absorbed by the cooler water from the

> air resulting in a cooling of the air and the heating of the water thus extracting condensate from the air without any significant change in relative humidity. The water may be sprayed into the ambient air upstream of precompressor device 223 which serves to compress the cooled air to produce pressurized air that is warmer than ambient air and has a lower relative humidity.
>
> For example, saturated ambient air at about 30°C. will be cooled to about 25°C. when directly contacted with water at about 20°C. After its precompression, the pressurized air will have a temperature of about 40°C. with a reduced humidity by reason of its elevated temperature.
>
> Evaporative cooler 224, downstream of precompressor 223, cools the warmed pressurized air to produce cooled pressurized air at about ambient air temperature and relative humidity. Cooler 224 is supplied with a portion of warmed water 225 produced by heat exchanger 222; and the cooled pressurized air is applied to filter 226 associated with power plant 220. Preferably, precompressor device 223 is constructed and arranged so that the pressure rise introduced thereby is at least greater than the pressure drop introduced by filter 226 [column 10, line 45, through column 11, line 5].

Anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention. RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). It is not necessary that the reference teach what the subject application teaches, but only that the claim read on something disclosed in the reference, i.e., that all of the limitations in the claim be found in or fully met by the reference. Kalman v. Kimberly Clark Corp., 713

F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984).

In applying Bronicki against independent claims 25 and 28 (see pages 3 and 4 in the answer), the examiner reads the step and means respectively recited in clause a) of method claim 25 and apparatus claim 28 on Bronicki's disclosure of direct contact heat exchanger 222, and the step and means respectively recited in clause b) of claims 25 and 28 on Bronicki's disclosure of evaporative cooler 224. The above passage from the Bronicki reference, however, fails to support the examiner's analysis. More particularly, Bronicki does not fairly teach that at least a portion of the water droplets introduced into the air flow by the direct contact heat exchanger 222 evaporates before reaching the compressor inlet whereby the air is cooled and humidified, or that at least a major portion of the water droplets introduced into the air flow by the evaporative cooler 224 does not evaporate before reaching the compressor inlet whereby the air is intercooled by evaporation of these droplets during compression thereof. To the contrary, Bronicki's disclosure actually indicates that the water droplets introduced by the direct contact heat exchanger 222 and the evaporative cooler 224 interact with the air flow in a manner quite different than that

specified in claims 25 and 28. Hence, the examiner's determination that Bronicki is anticipatory with respect to the subject matter set forth in these claims is not well taken.

Accordingly, we shall not sustain the standing 35 U.S.C. § 102(b) rejection of independent claims 25 and 28, and dependent claims 15, 26, 27, 30 and 31, as being anticipated by Bronicki.

II. The 35 U.S.C. § 103(a) rejection of claims 16 and 29 as being unpatentable over Bronicki

In addition to not disclosing the subject matter recited in independent claims 25 and 28, Bronicki would not have suggested same to a person having ordinary skill in the art.

Therefore, we also shall not sustain the standing 35 U.S.C. § 103(a) rejection of claims 16 and 29, which depend from claims 25 and 28, respectively, as being unpatentable over Bronicki.

SUMMARY

The decision of the examiner to reject claims 15, 16 and 25 through 31 is reversed.

REVERSED

LAWRENCE J. STAAB Administrative Patent Judge	)	
	)	BOARD OF PATENT
JOHN P. MCQUADE Administrative Patent Judge	)	APPEALS AND INTERFERENCES
JENNIFER D. BAHR Administrative Patent Judge	)	

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